

# **A Comparison of Selected EIA-782 Data with Data From Other Sources**

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## **Introduction**

The Energy Information Administration (EIA) EIA-782 survey series collects data on petroleum markets to fulfill legislative mandates from Congress and to provide comprehensive information for evaluating market behavior. It includes three surveys: Form EIA-782A, “Refiners’/Gas Plant Operators’ Monthly Petroleum Product Sales Report;” Form EIA-782B, “Resellers’/Retailers’ Monthly Petroleum Product Sales Report;” and Form EIA-782C, “Monthly Report of Prime Supplier Sales of Petroleum Products Sold for Local Consumption.” Any reference to the EIA-782 prices refers to the series that includes both the EIA-782A and EIA-782B surveys. Any reference to the EIA-782 volumes refers to the EIA-782C survey series. Any reference to the specific survey is identified as such. This article compares the data from the EIA-782 survey series with other sources to assess the quality of the EIA-782 data. Significant differences and trends among data series may indicate the need for changes in data collection and processing, the reporting population, survey or sample design, or may simply reflect conceptual differences across surveys.

The following data sources were used to compare with the EIA-782 series.

For prices:

- The Bureau of Labor Statistics (BLS) Office of Consumer Price Index (CPI) data for retail prices of motor gasoline and residential No. 2 fuel oil.
- The BLS Office of Producer Prices (PPI) data for wholesale prices of motor gasoline, No. 2 fuel oil and diesel fuel, and kerosene-type jet fuel.
- Oil Price Information Service (OPIS), a privately owned petroleum news and information source, for retail prices of on-highway diesel fuel.
- Form EIA-888, “On-Highway Diesel Fuel Price Survey,” for retail prices of on-highway diesel fuel.
- Form EIA-878, “Motor Gasoline Price Survey,” for retail pump prices of gasoline.

For volumes:

- Form EIA-821, "Annual Fuel Oil and Kerosene Sales Report," for retail volumes of distillate and residual fuel oil.

- EIA's *Petroleum Supply Annual (PSA)* product supplied for volumes of distillate fuel oil, residual fuel oil, and motor gasoline.
- Federal Highway Administration (FHWA) for retail volumes of motor gasoline.

A more detailed description of each data source is contained in the Notes section at the end of this article.

## Overview

The EIA-782 prices track closely with other EIA surveys and OPIS prices while the BLS prices are higher than EIA-782 prices. The EIA-782C volume data were compared with data from other EIA surveys and the FHWA data series. The EIA-782C volumes for motor gasoline and distillate fuel follow closely with the other data series. However, the EIA-782C residual fuel volumes are significantly below the levels shown by other EIA surveys. The following sections of this article discuss the differences among the price and volume data sources for No. 2 distillate fuel oil and diesel fuel, gasoline, kerosene-type jet fuel, and residual fuel.

## Price Comparisons

Tables FE1 – FE6 show that EIA-782 national prices are generally lower than the BLS, EIA-878, and EIA-888 price data series and follow OPIS prices closely. Retail EIA-782 prices include data from both the EIA-782A and EIA-782B surveys. Differences in the survey methodology across the surveys explain some of the price differences.

- The BLS, EIA-878, EIA-888, and OPIS prices include taxes, whereas EIA-782 prices exclude taxes. For Tables FE3 and FE5, a U.S.-total-weighted Federal and State tax provided by the FHWA is deducted from BLS, EIA-878, EIA-888, and OPIS retail prices. No adjustment was made to the BLS, EIA-878, EIA-888, and OPIS prices for local sales taxes and other State and local fuel taxes such as environmental taxes, underground storage tank taxes, and transportation use taxes because there were not sufficient data available for making adjustments at the U.S. level.
- BLS retail prices are collected from urban areas, whereas EIA-782, EIA-878, and EIA-888 prices are collected from both rural and urban areas across a region or state. The BLS wholesale prices used to calculate the Producer Price Index are collected from a sample of refiners and represent the refiners' selling price for the selected refined products. The EIA-782 gasoline, No. 2 fuel oil and diesel prices are collected from a census of refiners and a sample of resellers and retailers. EIA resale prices represent sales to a seller who will resell the product, i.e., sales by refiners that are not to the ultimate consumer. In most transactions, the wholesale price and resale price are the same. However, there are circumstances where a

refiner may make a wholesale sale to an ultimate consumer. EIA began using the term “Reseller” in 1983 to exclude wholesale transactions to ultimate consumers.

- The EIA-782 uses current period volume weights, while BLS, the EIA-878 and EIA-888 use fixed weights to compute weighted average prices.
- The EIA-782 prices represent all sales during the month, while BLS prices represent the average of outlet prices collected on different days across the first three weeks of the month. The EIA-878 and the EIA-888 weekly surveys also represent a point in time in the week. In this article, the annual EIA-878 and EIA-888 prices were calculated using simple arithmetic means of the published weekly prices.

### Residential No. 2 Fuel Oil

Table FE1 shows BLS prices are 3 to 5 percent higher than EIA-782 prices from 1995 through 2003. The difference between the two series widened from 3 to 5 percent after 1999 and then declined to the usual 3 percent level after 2001. BLS prices are obtained from urban areas only and do not reflect complete geographic coverage for this product. EIA-782 prices are volume weighted price estimates.

**Table FE1. 'U.S. Residential No. 2 Distillate Prices, 1995-2003**

Year	(Cents per gallon)		Percentage BLS/EIA-782
	EIA-782	BLS	
1995	86.7	89.3	103.00%
1996	98.9	101.9	103.03%
1997	98.4	101.4	103.05%
1998	85.2	88.0	103.29%
1999	87.6	90.0	102.74%
2000	131.1	136.0	103.74%
2001	125.0	131.0	104.80%
2002	112.9	116.2	102.88%
2003	135.6	140.0	103.28%

EIA Source: Table 18 Petroleum Marketing Monthly.

### No. 2 Fuel Oil Resale

Table FE2 shows BLS wholesale prices vary widely with EIA-782A resale prices between a range of 5 to 14 percent higher than EIA-782A. The differential between the series has decreased during the past 2 years. One possible reason is that the EIA-782A prices are current period volume weighted averages, and larger volume sales by refiners at lower prices receive greater

weight in calculating EIA-782A prices. The BLS prices are calculated using weights derived from other (non-current) time periods. BLS does adjust their weights on a monthly basis.

**Table FE2 U.S. Refiner Resale No. 2 Fuel Oil Prices, 1995-2003**

Year	(Cents per gallon)		Percentage
	EIA-782A	BLS	BLS/EIA-782A
1995	51.1	56.6	110.80%
1996	63.9	69.4	108.66%
1997	59.0	64.9	110.04%
1998	42.2	48.2	114.22%
1999	49.3	55.9	113.32%
2000	88.6	93.3	105.32%
2001	75.6	84.5	111.79%
2002	69.4	74.8	107.77%
2003	87.9	95.6	108.75%

EIA Source: Table 4 Petroleum Marketing Monthly.

### **Diesel Fuel On-Highway**

Table FE3 shows the annual estimates for EIA-782, EIA-888, and OPIS retail on-highway diesel fuel prices from 1995-2003. EIA-782, EIA-888, and OPIS prices vary mostly by 1 to 2 percent and track closely over this time period. Although State and Federal diesel fuel taxes were subtracted from the OPIS and EIA-888 prices, no adjustment was made for local sales taxes, and additional State and/or local taxes relating for environmental regulations and transportation use.

**Table FE3. U.S. Retail On-Highway Diesel Fuel Prices, 1995-2003**

Year	(Cents per gallon)			Percentage	
	EIA-782	EIA-888	OPIS	EIA-888/EIA-782	OPIS/EIA-782
1995	67.0	67.5	66.0	100.72%	98.53%
1996	78.8	80.0	78.8	101.55%	100.05%
1997	74.5	75.8	74.7	101.79%	100.24%
1998	59.3	60.2	58.9	101.52%	99.26%
1999	68.5	67.7	66.5	98.83%	97.10%
2000	103.6	104.5	103.7	100.87%	100.14%
2001	94.3	95.4	94.4	101.20%	100.15%
2002	86.2	87.3	86.6	101.28%	100.44%
2003	104.4	105.6	104.6	101.12%	100.19%

EIA Source: Table 16 Petroleum Marketing Monthly for EIA-782 data.

OPIS prices are a compilation of different sources obtained from several credit card issuers and do not reflect complete sales coverage for this product. Outlets from leading truckstop chains, as well as outlets participating in a price and credit reporting service report daily retail prices to OPIS. Approximately 4,500 price quotes are reported daily. In this article, the annual OPIS prices at the U.S. level were calculated using simple arithmetic means based on an average of the prices reported as of Monday of each week of the year.

The EIA-888 prices are based on a sample of 350 outlets. The sample uses a probability proportional to size sampling technique. The U.S. average is calculated using a weighted average of the regional prices where the weights are volumes reported on another EIA survey at the time of sample selection.

### **Diesel Fuel Resale**

Table FE4 shows the annual estimates for EIA-782A resale and BLS wholesale prices for No. 2 diesel fuel. BLS prices are consistently higher with the difference doubling from 7% in 2002 to 14% in 2003. This product category contains prices for both low and high sulfur diesel fuel. The EIA-782A volume weighted averages reflect the relative importance of these two sulfur categories reported by refiners in the calculation of the average price.

**Table FE4. U.S. Refiner Resale No. 2 Diesel Fuel Prices, 1994-2003**

Year	(Cents per gallon)		Percentage
	EIA-782A	BLS	BLS/782A
1994	52.9	56.0	105.94%
1995	53.8	57.0	105.87%
1996	65.9	69.9	106.06%
1997	60.6	64.6	106.52%
1998	44.4	47.4	106.83%
1999	54.6	57.1	104.58%
2000	89.8	93.1	103.69%
2001	78.4	83.6	106.66%
2002	72.4	77.7	107.35%
2003	88.3	100.9	114.29%

EIA Source: Table 4 Petroleum Marketing Monthly.

### **Motor Gasoline - Retail**

Table FE5 shows the annual estimates for EIA-782, EIA-878, and BLS retail prices from 1994-2003. This paper only discusses the prices for regular grade gasoline. BLS prices vary between 5 and 8 percent above the EIA-782 prices. EIA-878 prices vary between 1 and 6 percent above EIA-782 prices during the same time period. Even though both BLS and EIA-878 prices have been adjusted for federal and state taxes, these prices still contain additional taxes relating to local sales taxes and highway use taxes that could not be removed for this analysis. As a result, the EIA-782 prices should be lower than these other series.

**Table FE5. U.S. Retail Motor Gasoline Prices, Regular Grade, 1994-2003**

Year	(Cents per gallon)			Percentage	
	EIA-782	EIA-878	BLS	EIA-878/EIA-782	BLS/EIA-782
1994	69.4	70.1	73.9	101.01%	106.48%
1995	72.5	73.7	77.3	101.66%	106.62%
1996	81.2	85.0	85.7	104.68%	105.54%
1997	80.0	82.0	85.5	102.50%	106.88%
1998	62.5	64.4	67.4	103.04%	107.84%
1999	73.0	75.2	78.2	103.01%	107.12%
2000	106.6	109.6	112.2	102.81%	105.28%
2001	99.6	103.2	107.3	103.61%	107.76%
2002	91.6	96.1	97.4	104.91%	106.33%
2003	111.0	117.2	120.2	105.59%	108.26%

EIA Source: Table 31 Petroleum Marketing Annual for EIA-782 data.

The annual BLS prices were calculated using simple arithmetic mean of monthly prices. The BLS monthly prices are calculated based on approximately 900 price quotes. Approximately 25 to 35 prices are collected from outlets in each published geographic area. EIA-782 prices represent all sales transactions through company-operated outlets by all refiners and a sample of resellers/retailers throughout the U.S. There are limitations in comparing a simple average data series with a volume weighted average price series across months because of the effect of volume changes throughout the year on the annual price estimate.

The EIA-878 also uses fixed volume weights for calculating U.S. prices based on approximately 800 price quotes each week. Separate outlet weights are used based on the sampled outlet's number of pumps, a proxy for sales volume, to obtain weekly averages for the specific formulations, grades and geographic areas. The weights used in aggregating grades, formulations and geographic areas are derived using volume data from the EIA-782C "Monthly Report of Prime Suppliers Sales of Petroleum Products Sold for Local Consumption," and demographic data from the Bureau of the Census and Department of Transportation on population, number of gasoline stations and number of vehicles. A simple average of weekly prices was calculated to obtain the annual average price. The EIA-782 prices utilize all sales transactions throughout the reference month, whereas the EIA-878 prices are Monday morning prices as of 8:00 A.M.

### **Motor Gasoline - Resale**

Table FE6 shows the annual estimates for EIA-782A and BLS resale motor gasoline prices from 1994 – 2003. Except for 1994, the BLS prices vary between 1 and 3 percent from the EIA-782A during this ten-year period. The data track closely during 1998 – 2002 despite increased price volatility in the gasoline markets during this time period. The difference widened during 2003 when there were strong price increases in gasoline markets.

**Table FE6. U.S. Refiner Resale Motor Gasoline Prices, Regular Grade, 1994-2003**

Year	(Cents per gallon)		Percentage
	EIA-782A	BLS	BLS/EIA-782
1994	56.6	59.2	104.64%
1995	59.3	60.9	102.68%
1996	68.5	70.7	103.26%
1997	67.3	69.6	103.41%
1998	49.9	51.1	102.42%
1999	62.0	62.3	100.51%
2000	94.2	92.5	98.14%
2001	86.5	87.9	101.58%
2002	80.6	81.0	100.51%
2003	98.1	100.6	102.54%

EIA Source: Table 6 Petroleum Marketing Annual.

### **Kerosene-Type Jet Fuel - Resale**

Table FE7 shows the annual estimates for EIA-782A refiner resale kerosene-type jet fuel prices and BLS wholesale kerosene-type jet fuel prices from 1994 – 2003. The two price series vary between 1 and 5 percent during 1994 – 1998. The price differential narrows after 1998 and remains stable at approximately 1 percent. BLS wholesale prices are expected to be similar to EIA-782A resale prices since EIA kerosene-type jet fuel prices are collected from a census of refiners on Form EIA-782A and BLS collects from a sample of refiners.

**Table FE 7. U.S. Kerosene-Type Jet Fuel Resale Prices, 1994-2003**

Year	(Cents per gallon)		Percentage
	EIA-782A	BLS	BLS/EIA-782A
1994	53.4	53.8	100.75%
1995	53.9	55.1	102.23%
1996	64.6	67.6	104.64%
1997	61.3	64.0	104.40%
1998	45.0	46.7	103.83%
1999	53.3	53.9	101.16%
2000	88.0	89.1	101.21%
2001	76.3	78.2	102.52%
2002	71.6	72.2	100.78%
2003	87.2	87.3	100.08%

EIA Source: Table 4 Petroleum Marketing Monthly.

## Volume Comparisons

EIA-782C volumes are compared with volumes reported in the EIA-821, the *PSA*, and the FHWA data series. Product supplied in the *PSA* is an estimate of the demand for petroleum products. It is calculated by adding and subtracting volumes as they move in and out of the primary distribution stream. Sales volume data from the EIA-821 reflect the transfer of product title from a seller to a buyer whereas the EIA-782C measures sales into the States where the products are ultimately consumed. FHWA doesn't collect actual sales data on gasoline and diesel fuel. States report their fuel volumes to FHWA based on the beginning inventory at the terminal facility minus exports plus shipments to the terminal during the reporting cycle. The difference in survey populations, concepts and methodology underlie some of the differences that exist between the EIA-821, the *PSA*, and the FHWA data series.

### Distillate Fuel Oil

Table FE8 shows volumes of distillate fuel oil for the EIA-782C, EIA-821, and *PSA* series from 1993 through 2002. EIA-782C volumes have been below EIA-821 volumes since 1993 and below *PSA* volumes since 1997. The differential continues to grow wider after 1999. Table FE8 also shows that the difference between the EIA-782C and EIA-821 volumes is greater than the difference between the EIA-782C and the *PSA* volumes.

**Table FE8. U.S. Distillate Fuel Oil Volumes, 1993-2002**

Year	(Million Gallons)			Percentage	
	EIA-782C	EIA-821	PSA	EIA-821/ EIA-782C	PSA / EIA-782C
1993	48,029	48,290	46,622	100.54%	97.07%
1994	49,188	50,424	48,477	102.51%	98.55%
1995	49,332	51,469	49,158	104.33%	99.65%
1996	51,753	53,379	51,731	103.14%	99.96%
1997	51,903	54,366	52,665	104.75%	101.47%
1998	52,371	55,306	53,064	105.60%	101.32%
1999	54,614	57,573	54,759	105.42%	100.27%
2000	55,670	59,601	57,217	107.06%	102.78%
2001	57,344	59,911	58,971	104.48%	102.84%
2002	55,237	59,343	57,885	107.43%	104.79%

EIA Source: Table 50 Petroleum Marketing Annual for EIA-782C data.

Table S5 Petroleum Supply Annual for *PSA* data.

Table 1 Fuel Oil and Kerosene Sales, 2002 for EIA-821 data.

All three data series show a decline in volume from 2001 – 2002. Although Table FE8 shows total distillate volumes, a closer review of the energy use sector volumes in the EIA-821 data series (not shown in this table) provide some explanation for the variation between the data series. EIA-821 data show that sales of distillate fuel oil declined in the industrial, commercial and electric power sectors as moderate natural gas prices reduced the opportunities and need for fuel switching from natural gas to distillate. One possible source for the widening gap between EIA-821 and EIA-782C volumes is the sales reported for on-highway use, which comprised 58% of all distillate sales in 2002 in the EIA-821 data series. The EIA-821 on-highway energy use sector shows an increase of approximately 27% since 1996 and is the largest component contributing to the increase in distillate volumes for that survey during the past 7 years. The EIA-821 volumes for on-highway use are obtained from the Federal Highway Administration and used in place of data reported for this category. However, some EIA-821 respondents may report sales to commercial and institutional fleet vehicles in the commercial use category rather than in the on-highway use category. If the commercial category contains some on-highway use volumes, and exogenous data are used to replace the data for on-highway use, then some double counting of distillate volumes for transportation use on the EIA-821 may occur. If sales to fleet vehicles, which are reported in the commercial category, are increasing at approximately the same rate as other distillate sales for other on-highway use, then the amount of double counting of distillate sales in the EIA-821 survey may also be increasing over the past seven years, and may contribute to any differences between the EIA-782C and EIA-821 data series.

### Motor Gasoline

Table FE9 shows volumes of motor gasoline from the EIA-782C, PSA, and FHWA series from 1993 through 2002.

**Table FE9. U.S. Motor Gasoline Volumes, 1993-2002**

Year	(Million Gallons)			Percentage	
	EIA-782C	PSA	FHWA	PSA / EIA-782C	FHWA / EIA-782C
1993	117,886	114,607	116,614	97.22%	98.92%
1994	120,151	116,523	118,531	96.98%	98.65%
1995	122,582	119,405	120,876	97.41%	98.61%
1996	123,904	120,969	123,327	97.63%	99.53%
1997	125,632	122,901	125,045	97.83%	99.53%
1998	128,696	126,518	128,504	98.31%	99.85%
1999	131,066	129,247	132,261	98.61%	100.91%
2000	129,173	129,876	132,280	100.54%	102.41%
2001	132,029	131,991	134,110	99.97%	101.58%
2002	135,164	135,640	137,664	100.35%	101.85%

EIA Source: Table 48 Petroleum Marketing Annual for EIA-782C data.

Table S4 Petroleum Supply Annual for PSA data.

### EIA-782C and PSA

Table FE9 shows the differential between the EIA-782C volumes and the PSA volumes narrowed during the past ten years with the difference being within 1% since 1999. One reason the differential narrowed during the 1990s was that the PSA improved its coverage of downstream blending of finished motor gasoline by including gasoline blenders in the survey reporting population. Blending of fuel ethanol, methanol, methyl tertiary butyl ether (MTBE), and other blend stock with gasoline often occurs downstream from the refineries.

### EIA-782C and FHWA

Table FE9 also shows that EIA-782C volumes generally track closely with the FHWA motor gasoline volumes and the differential has remained at 2 percent since 2000. FHWA estimates the gasoline consumption by the federal, state, and local government since these volumes are not taxed. Also, FHWA has various models to estimate non-highway use in each state. FHWA estimates federal government highway gasoline use based on information obtained from federal agencies. State-reported federal use of gasoline in excess of the FHWA estimate is presumed to be either civilian non-highway or military use and is eliminated from the Federal figure reported by the State. The constant level of the difference in volumes between these two series may be due to some under coverage of the market by the EIA-782C or differences in how FHWA estimates gasoline sales for off-highway and government use.

### **Residual Fuel Oil**

Table FE10 shows volumes of residual fuel oil from the EIA-782C, EIA-821, and PSA from 1993 through 2002.

**Table FE10. U.S. Residual Fuel Oil Volumes, 1993-2002**

Year	(Million Gallons)			Percentage	
	EIA-782C	EIA-821	PSA	EIA-821/ EIA-782C	PSA / EIA-782C
1993	13,555	15,064	16,559	111.13%	122.16%
1994	12,753	14,825	15,652	116.25%	122.73%
1995	9,623	12,318	13,061	128.01%	135.73%
1996	10,610	13,257	13,000	124.95%	122.53%
1997	10,583	12,504	12,218	118.15%	115.45%
1998	11,513	14,730	13,598	127.94%	118.11%
1999	10,259	13,328	12,724	129.92%	124.03%
2000	9,733	13,211	13,375	135.73%	137.42%
2001	10,285	13,609	13,508	132.32%	131.34%
2002	8,259	10,362	10,731	125.46%	129.93%

EIA Source: Table 49 Petroleum Marketing Annual for EIA-782C data.

Table S6 Petroleum Supply Annual for PSA data.

Table 2 Fuel Oil and Kerosene Sales, 2002 for EIA-821 data.

EIA-782C vs. PSA and EIA-821

Table FE10 shows the EIA-782C is significantly below the PSA and EIA-821 data series. The difference between the EIA-782C and the other two series is quite large and fluctuates relative to the EIA-782C from 11% in 1993 to a high of 37% in 2000. The gap between the EIA-782C and the EIA-821 has slightly declined since 2000 but there remains a significant gap of 25% in 2002. The gap between the EIA-782C and PSA data has remained at approximately 30% since 2001. The large and continuous divergence between the EIA-782C and the other two series indicates that the EIA-782C is missing some residual fuel oil sales.

Residual fuel oil sales plunged in 2002, with the EIA-782C volumes declining by 20%, EIA-821 declined by 24% and PSA declined by 21%. Although Table FE10 shows total residual fuel volumes, a closer review of the energy use sector volumes in the EIA-821 data series (not shown in this table) provide some explanation for the variation between the data series. Environmental regulations restricting fuel use, abundant supplies and moderate prices for natural gas prices all contributed to the sharp decline in residual fuel sales. The EIA-821 data series shows electric power and vessel bunkering, the largest categories for residual fuel, falling by 37% and 10% respectively, during 2002. The gap between the EIA-782C and the EIA-821 narrowed by 7% but the gap between the EIA-782C and PSA remained approximately the same between 2001 and 2002. The narrowing of the large gap between the EIA-782C and the EIA-821 from 2001 to 2002 suggests that the sales related to fuel switching from natural gas to residual fuel that occurred on a large scale during 2001 may contribute to the divergence between the EIA-782C and the EIA-821 and PSA data series.

**Table FE11. EIA-821 and EIA-782C U.S. Residual Fuel Oil Volumes by PADD, 2000-2002**

	<b>(Million Gallons)</b>		
	<b>2000</b>	<b>2001</b>	<b>2002</b>
EIA-782C US Residual Fuel Oil	9,733	10,285	8,259
EIA-821 US Residual Fuel Oil	13,211	13,546	10,362
Percentage EIA-782C/EIA-821	73.67%	75.93%	79.70%
<b>Percentage Across PADDs</b>			
<b>EIA-782C/EIA-821</b>			
PADD 1	73.75%	73.63%	76.62%
PAD Subdistrict 1A	101.11%	83.18%	96.66%
PAD Subdistrict 1B	87.42%	87.84%	86.02%
PAD Subdistrict 1C	55.20%	59.69%	64.65%
PADD 2	48.20%	48.47%	60.40%
PADD 3	67.68%	80.70%	82.06%
PADD 4	328.57%	332.71%	297.10%
PADD 5	83.47%	82.49%	87.66%

EIA Source: Table 49 Petroleum Marketing Annual for EIA-782C data.

Table 2 Fuel Oil and Kerosene Sales, 2002 for EIA-821 data.

Table FE11 compares the EIA-782C and EIA-821 volumes for 2000 – 2002 across the five PADD regions. The data show that during this time period, the 782C data are missing significant volumes in PAD Sub-district 1C and in PADDs 2 and 3. Although, the EIA-782C volumes are approximately 3 times as high as the EIA-821 volumes in PADD 4, PADD 4 is the smallest market with approximately 3% of total US residual fuel sales. Sub-district 1C comprises approximately 25% of U.S. residual fuel sales and PADD 3 constitutes approximately 15%. Additional research is needed, mainly in PAD Sub-district 1C and PADD 3, to determine the causes for the divergence between the EIA-782C and EIA-821 data series.

## Summary

The EIA-782 petroleum product prices were compared with alternative sources from other EIA surveys, BLS, and OPIS prices. The EIA-782 prices tracked closely with other EIA surveys and OPIS prices. BLS prices were higher than EIA-782 prices, and the price differences widened in 2003 across all products. Some difference was expected between these two series because EIA collects prices from a census of refiners and BLS collects prices from a sample of refiners. The EIA-782C volume data were compared with data from other EIA surveys and the FHWA series. The EIA-782C volumes for motor gasoline and distillate fuel track closely with the other data series. However, the EIA-782C residual fuel volumes are significantly below the levels shown by other EIA surveys. The large difference between the EIA-782C residual fuel volumes and the other data sources requires further investigation into the reporting practices of the EIA-782C respondents for this product. Other differences exist among the data sources because of different reporting populations, geographic and/or market coverage, survey design, methodology, reference period intervals, and product and energy-use sector definitions.

## Notes

### Data Sources

The Form EIA-782A, "Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report," collects monthly price and volume data at the State level for 14 petroleum products for various retail and wholesale marketing categories. It is a census of refiners and gas plant operators. The frame is updated on an ongoing basis using respondent lists from surveys such as the Form EIA-810, "Monthly Refinery Report;" the Form EIA-816, "Monthly Natural Gas Liquids Report;" and industry trade publications. Currently, 110 companies respond to the EIA-782A survey.

The Form EIA-782B, "Resellers'/Retailers' Monthly Petroleum Product Sales Report," is sent to a sample of resellers and retailers of motor gasoline, distillate, propane, and residual fuel oil. Respondents to Form EIA-863, "Petroleum Product Sales Identification Survey," are used as the sampling frame of resellers and retailers for the EIA-782B. Firms having 5 percent or more of

sales in a State are selected with certainty. The remaining companies on the frame are sampled using probability proportional to size methodology by geographic area, product, and type of sale. The EIA-782B sample includes approximately 2,000 companies.

The Form EIA-782C, "Monthly Report of Prime Supplier Sales of Petroleum Products Sold for Local Consumption," collects volumes of prime supplier sales of selected petroleum products into States where they are locally sold and consumed. A prime supplier is a firm that produces, imports, or transports any of the selected petroleum products across State boundaries and local marketing areas and sells the product to local distributors, local retailers, or end users. This survey provides an accurate measure of consumption in most States. Currently, 183 firms respond to the EIA-782C survey.

Data collected on the Forms EIA-782A, EIA-782B, and EIA-782C are published in the *Petroleum Marketing Monthly (PMM)* and the *Petroleum Marketing Annual (PMA)*.

In addition, production, import, and export data collected by EIA's Petroleum Division are published in the *Petroleum Supply Monthly (PSM)* and the *Petroleum Supply Annual (PSA)*. The Petroleum Division uses the Petroleum Supply Reporting System (PSRS) for data collection. The PSRS is composed of a family of data collection survey forms, data processing systems, and publications systems. Detailed data on refinery and natural gas plant operations, bulk terminal and pipeline stocks, petroleum products imports, and movements of petroleum products among Petroleum Administration for Defense (PAD) districts are collected monthly. Figures for product supply originate from Forms EIA-810, "Monthly Refinery Report;" EIA-811, "Monthly Bulk Terminal Report;" EIA-812, "Monthly Product Pipeline Report;" EIA-813, "Monthly Crude Oil Report;" EIA-814, "Monthly Imports Report;" EIA-816, "Monthly Natural Gas Liquids Report;" and EIA-817, "Monthly Tanker and Barge Movement Report." Aggregate export data obtained from the Bureau of the Census are also included in computations for the *PSM* and *PSA*. The *PMA* and the *PSA* may contain revisions of the data published in the *PMM* and the *PSM*, respectively, due to late submissions or revisions to the monthly data.

The Form EIA-821, "Annual Fuel Oil and Kerosene Sales Report," collects data on the sales to end users of distillate fuel oil, residual fuel oil, and kerosene. The sample size is approximately 4,000 for 2002. The data are used to determine the level of sales by energy-use category and product at the State, regional, and national levels. The sampling frame for the EIA-821 is also derived from the respondents to Form EIA-863. The EIA-863 is a quadrennial census used to collect information on size, type, and geographic location of firms selling petroleum products. Data from the Federal Highway Administration (FHWA) of the U.S. Department of Transportation replace EIA-821 data reported as on-highway diesel sales.

The Highway Statistics Division of the FHWA collects information related to highway transportation. Sales volumes of motor gasoline are published on a calendar year basis and are a

cumulative tabulation of gross gallons of gasoline reported by wholesale distributors to State motor fuel tax agencies. The FHWA collects information on finished motor gasoline, with no distinction made among motor gasoline grades. The data include gasoline for both highway and non-highway use. The FHWA includes gasohol but excludes exports, fuels for military use, and dealer transfers.

The Bureau of Labor Statistics (BLS) publishes the aggregate index for household fuels and its component indexes for motor fuels. Retail prices are collected monthly by BLS representatives in the urban areas, and support the estimation of the Consumer Price Index (CPI). Wholesale prices are collected monthly and support the estimation of the Producer Price Index (PPI).

The CPI and PPI use fixed volume weights to measure the change in price over time. The CPI measures the change in prices for a defined market basket of goods and services and the PPI measures the change in prices received by domestic producers for their output. Approximately 900 retail prices are collected for regular grade gasoline in approximately 87 urban areas across the country and include all taxes directly associated with the purchase and the use of the items. The 87 areas cover 39 States and the District of Columbia. The PPI collects prices from a sample of domestic refiners. Although most PPI prices are collected on one particular day of the month, the prices for refined petroleum products are commonly an average of prices during the first 10 working days of the month, or the prices received by oil refineries on the 10<sup>th</sup> working day of each month.